



AUTONOMY INSTITUTE

PATH TO COMMERCIALIZATION

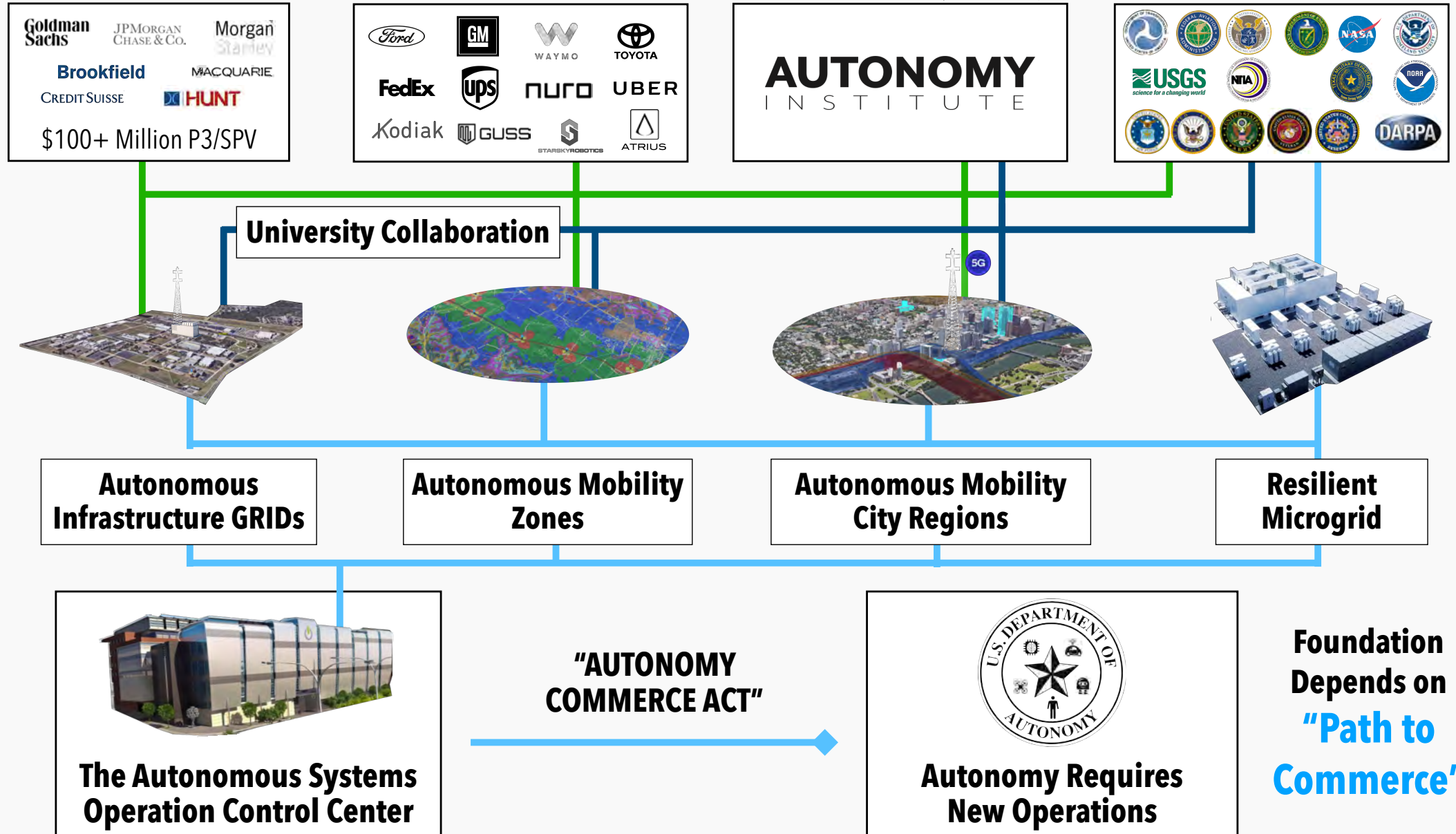
PREPARED FOR:



| | | |
|-----------------------|---------------------|-----------------------|
| Chair Pitts | Commissioner Gairo | Commissioner Eiland |
| Vice Chair Alexander | Commissioner Floyd | Commissioner DasGupta |
| Commissioner Apodaca | Commissioner Ramos | Commissioner Svirsky |
| Commissioner Thompson | Commissioner Yeatts | Rondella Hawkins |

CREATING INTELLIGENT AND RESPONSIVE CITIES AND COMMUNITIES

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"INVESTMENT IN A 21ST-CENTURY INTELLIGENT &
AUTONOMOUS INFRASTRUCTURE IS AMONG THE HIGHEST
PRIORITIES FOR STIMULATING ECONOMIC EXPANSION,
NATIONAL SECURITY, AND JOB GROWTH. "

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I N S T I T U T E



INTELLIGENT **INFRASTRUCTURE** IS AT THE HEART OF RESILIENT CITIES
IT WILL DRIVE **JOBS**, INNOVATION, **GROWTH**, DIVERSITY, & PROSPERITY

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ECONOMIC OPPORTUNITY & AFFORDABILITY



CULTURE & LIFELONG LEARNING



SAFETY & SECURITY



HEALTH & ENVIRONMENT



MOBILITY & LOGISTICS



GOVERNMENT THAT WORKS FOR ALL



INFRASTRUCTURE TO BUILD A SUSTAINABLE AND FLOURISHING CITY

THREE FOUNDATIONS FOR AN INTELLIGENT CITY

BUILDING INTELLIGENT, CONNECTED, INCLUSIVE, AUTONOMOUS, AND **RESILIENT 21ST CENTURY CITIES**

BRIDGE BETWEEN PHYSICAL AND DIGITAL



EDGE INFRASTRUCTURE



ACTIVE DIGITAL TWIN



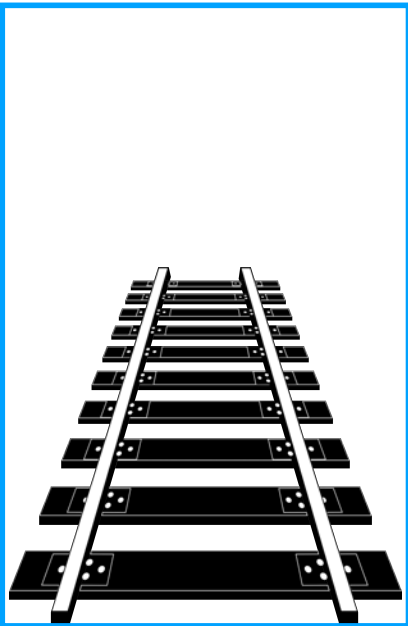
DATA EXCHANGE

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INDUSTRY 4.0 REQUIRES INTELLIGENT INFRASTRUCTURE

Railroad

Rail Lines,
Intermodals



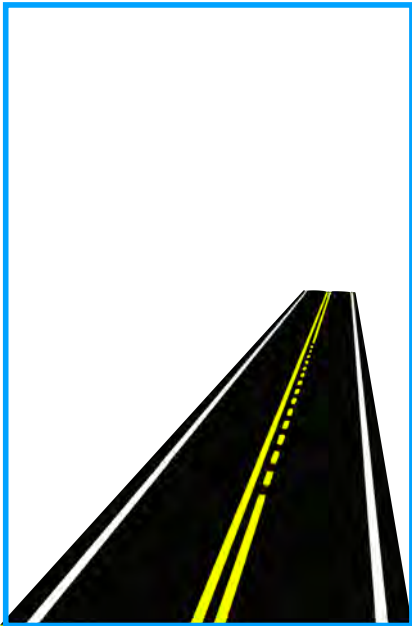
Electricity

Transformers and
Transmission



Automotive

Roads/
Highways



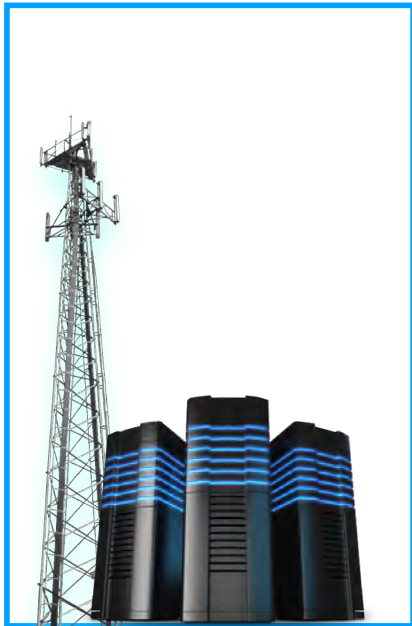
Aircraft

Airports, Radars/
Transponders



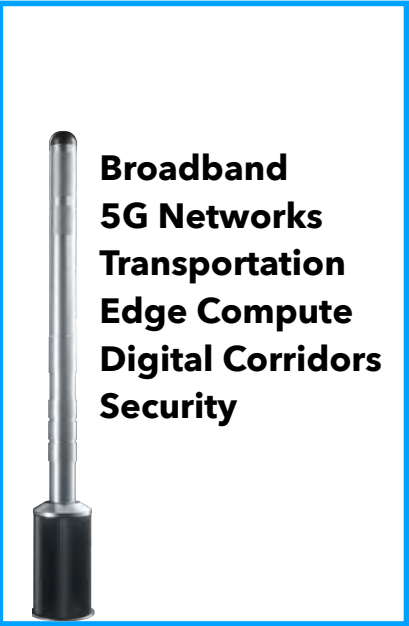
Internet

Data Centers,
Towers, ISP



Industry 4.0

Public Infrastructure
Network Nodes



TSUNAMI OF TECHNOLOGY **BLIGHT** COMING TO OUR **CITIES!**

SECURITY & OPERATIONAL ISSUES

Carriers

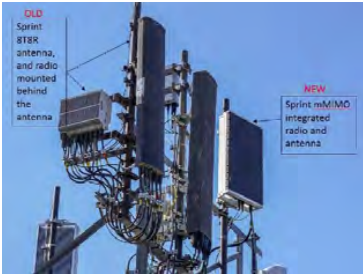
4G 5G CBRS Private RAN
Fiber Backhaul IoT Services

Transportation

Intelligent Transportation
Systems CV2X Radars
Cameras Lidar Beacons
APNT

Computing

Edge Computing Cloud
Vendors Integrators App
Developers New Services



Government

EMS Networks Public
Safety Environmental
Sensors APNT

Smart City

RF Sensors Cameras
Environmental Safety

Electric

Energy Resilience
Transformers Energy Storage
EMP Hardening

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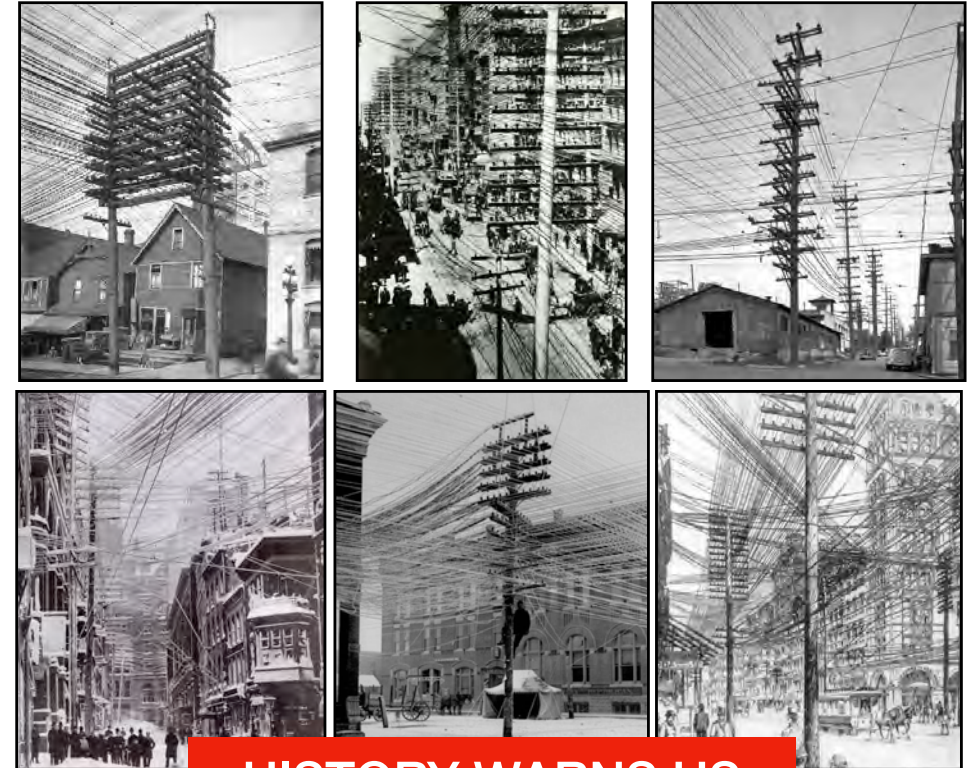
NEW INFRASTRUCTURE IS **REQUIRED** TO SUPPORT INDUSTRY 4.0

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SECURITY ISSUES

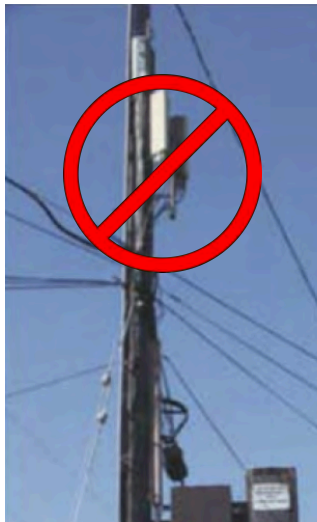
LEGISLATION FORCES DEPLOYMENTS



HISTORY WARNS US

The **Tsunami** of Technology **Blight** Coming to Your **City**!

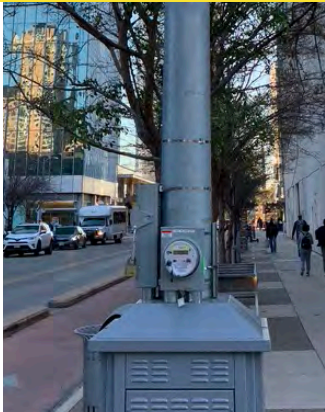
PINNS ARE THE 21ST-CENTURY INFRASTRUCTURE



Over **\$200 Billion** will be Invested into this Edge Infrastructure.



Sensors



Small Cells



ITS, VRAD, Transformers



- 1
COMPUTE
- 2
LATENCY
- 3
SPECTRUM



PUBLIC
INFRASTRUCTURE
NETWORK
NODES

PUBLIC INFRASTRUCTURE NETWORK NODE (PINN)

INTEGRATED • INTELLIGENT • INFRASTRUCTURE

“Investment in a 21st-century Intelligent & Autonomous Infrastructure is among the highest priorities for stimulating economic expansion, national security, and job growth.”

Billions in Growth

Millions of New Jobs

Economic Leadership

MOBILITY REQUIRED **ROADS**, INDUSTRY 4.0 REQUIRES **PINNS**

- | | |
|---|--|
| <ul style="list-style-type: none">● Critical to National Security● Neutral Host Infrastructure● Unified Security & Control● Streamline Installation, Operations● Accelerate Acquisition● Expands equity of public services | <ul style="list-style-type: none">● Advances Vision Zero● Sovereign Data Exchange● Outsource network O & M● Future Proof to new technology● Consolidates Street Scape● Integrated Multi-Domain View |
|---|--|

Broadband for All

Secure NextG

Optimized Mobility

Health & Safety

Intelligent City

Resilient Grid

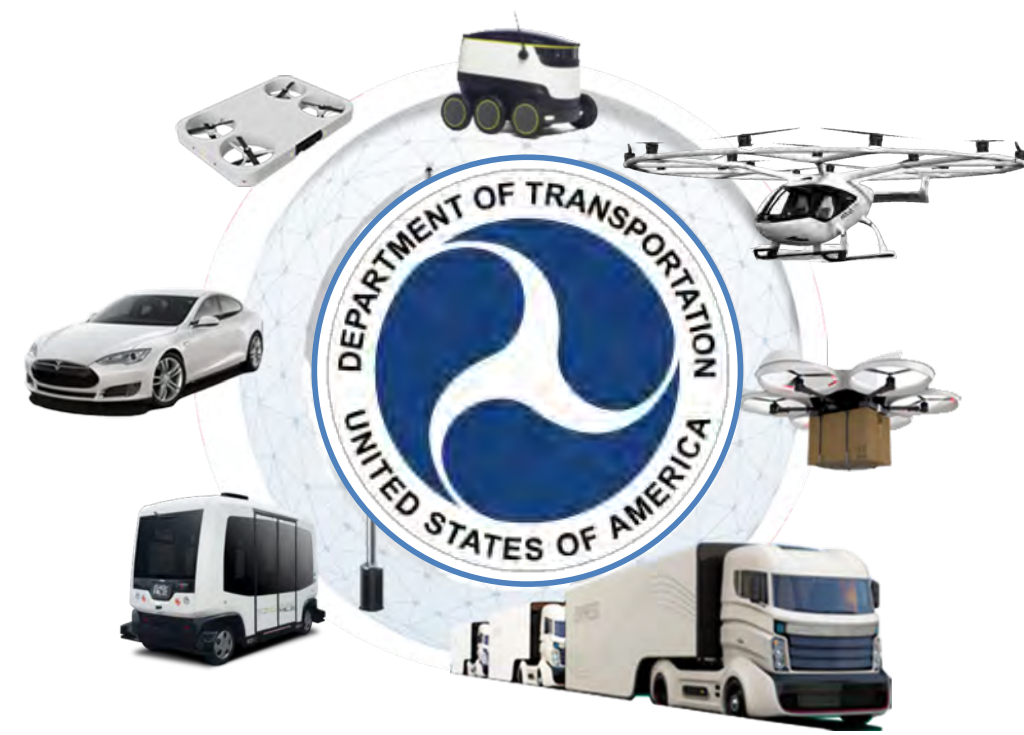
ADDRESSING NATIONAL PRIORITIES

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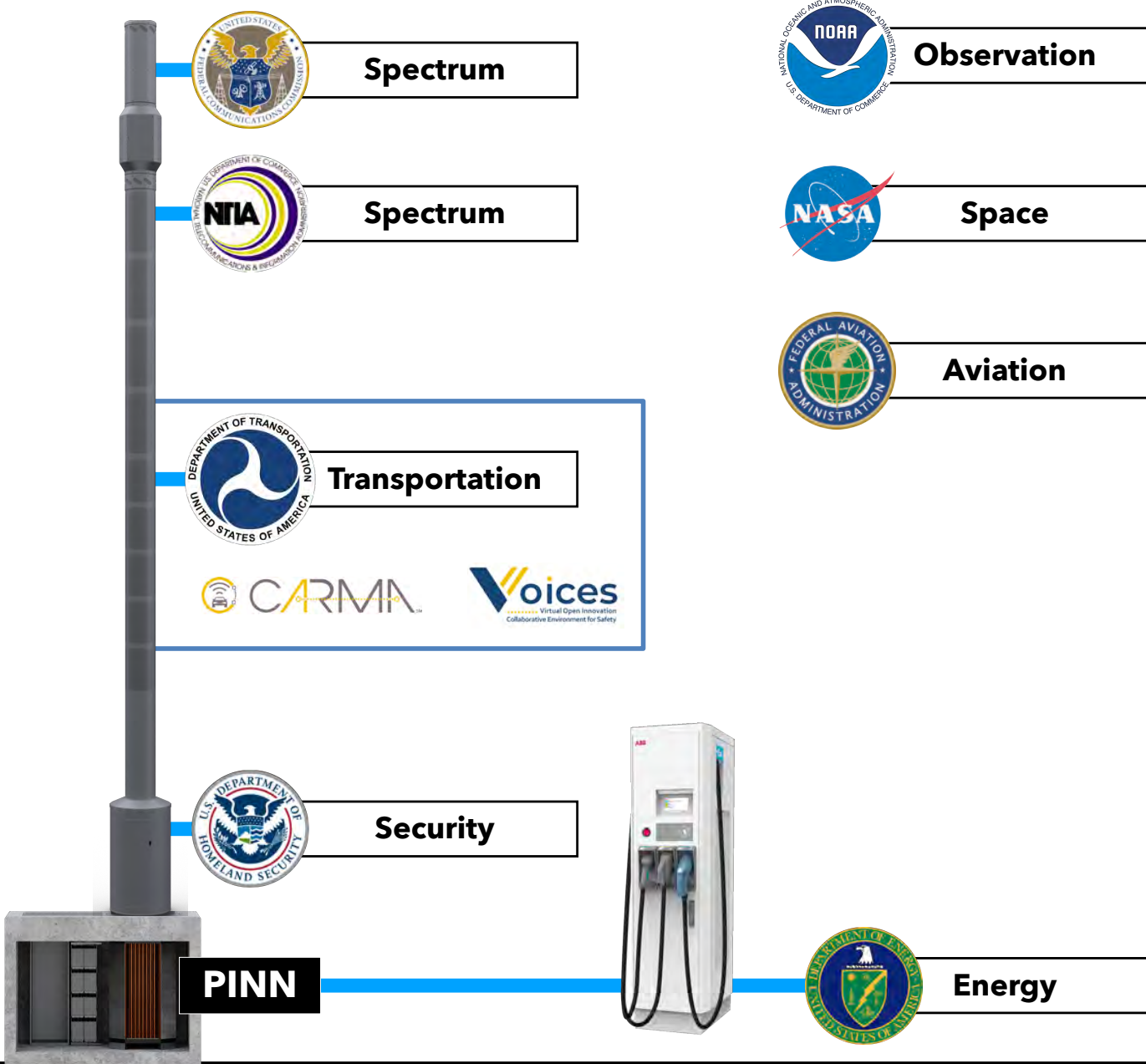


THE PINN IS THE 21ST CENTURY VERSION OF THE INTERSTATE

"INVESTMENT IN A 21ST-CENTURY INTELLIGENT & AUTONOMOUS INFRASTRUCTURE IS AMONG THE HIGHEST PRIORITIES FOR STIMULATING ECONOMIC EXPANSION, NATIONAL SECURITY, AND JOB GROWTH."

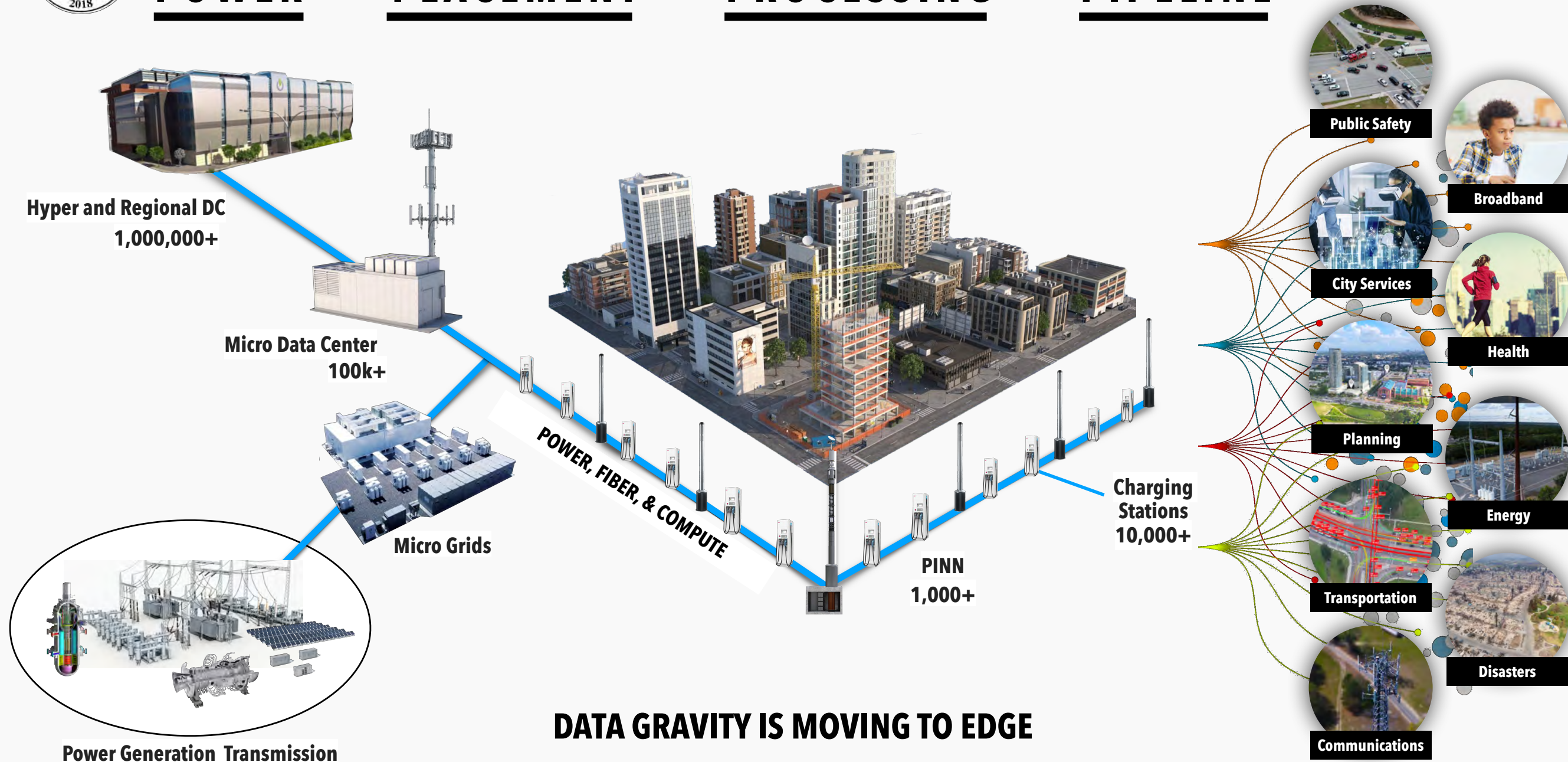


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PUBLIC INFRASTRUCTURE NETWORK NODES - I3 PINN **POWER • PLACEMENT • PROCESSING • PIPELINE**





PUBLIC INFRASTRUCTURE NETWORK NODE (PINN)

INTEGRATED INTELLIGENT INFRASTRUCTURE (BROADBAND, NEXTG, EDGE, ITS, APNT, GRID)

Edge AI

< 20ms

Hardened

20 kW

- Radio Access Networks (5G, 6G)
- Intelligent Transportation Systems
- Edge Supercomputing
- Situational Awareness
- Precision Navigation
- Terabits of Sensor Fusion
- 1+ Petabytes of Storage
- Security and Privacy
- Quick Installation
- Thermally Managed
- Easy Management
- Data Sovereignty
- Microgrid Systems
- 20 - 60 kWh Storage



Starlink

APNT

4G RAN

5G RAN

Phased Array

Radar VR

Lidar VR

EOS VR

Electronics

Edge Compute

CORE

Thermal Management

Energy Storage

Power/Fiber Interconnects

AIM

JMA
WIRELESS

verizon

NOKIA

NUVOTRONICS

aruba

MAVENIR

3GS
DIGITAL GLOBAL SYSTEMS

valmont

Landis
Gyr+

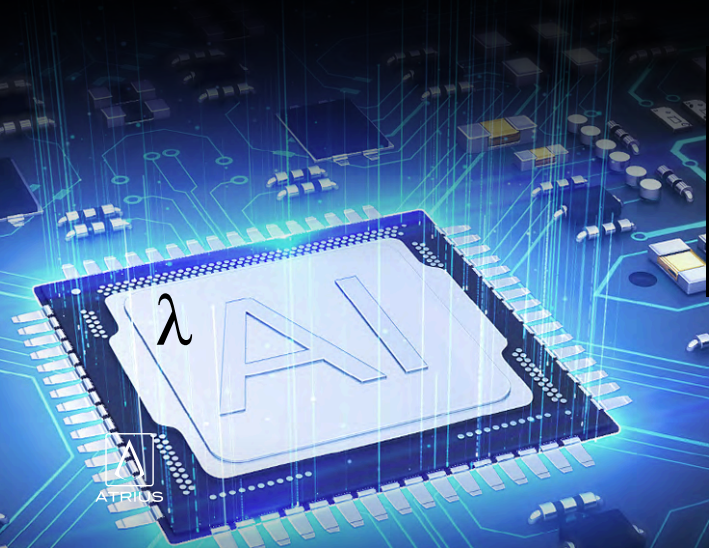
Hewlett Packard
Enterprise

NVIDIA

CISCO

VERTIV

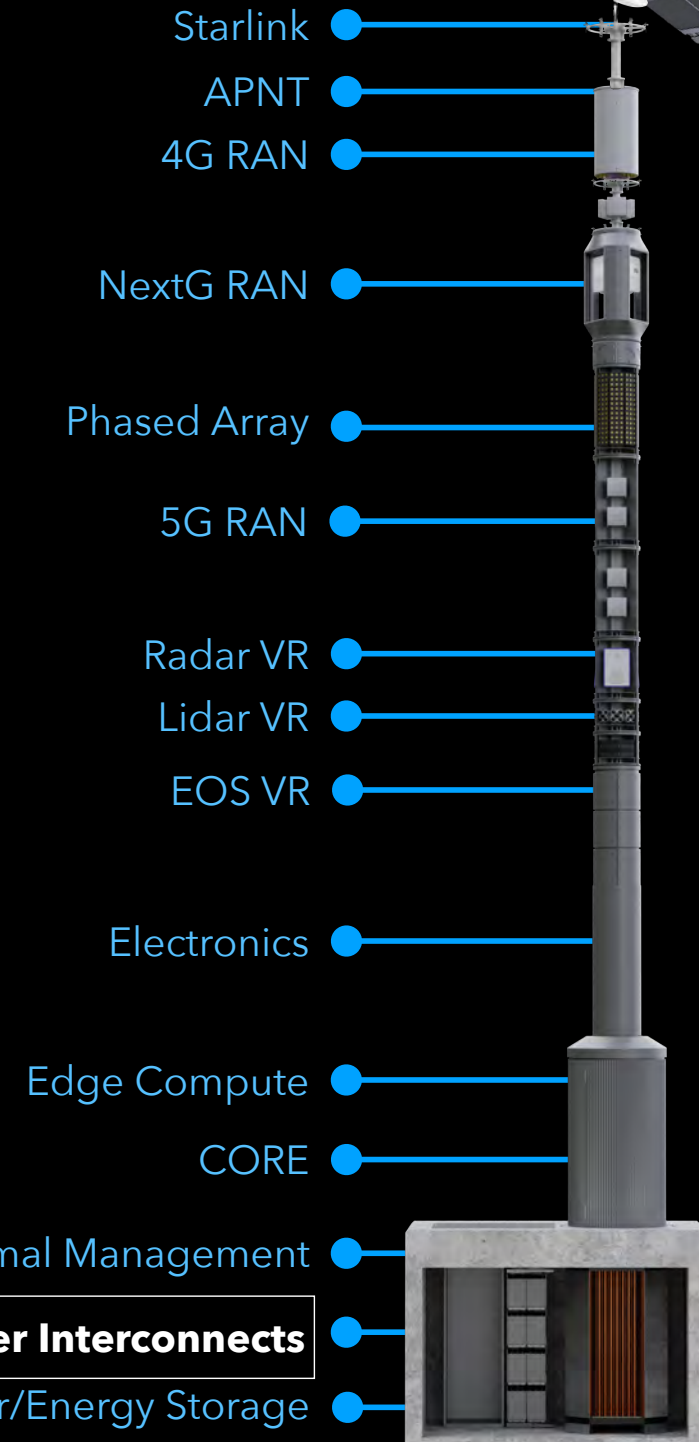
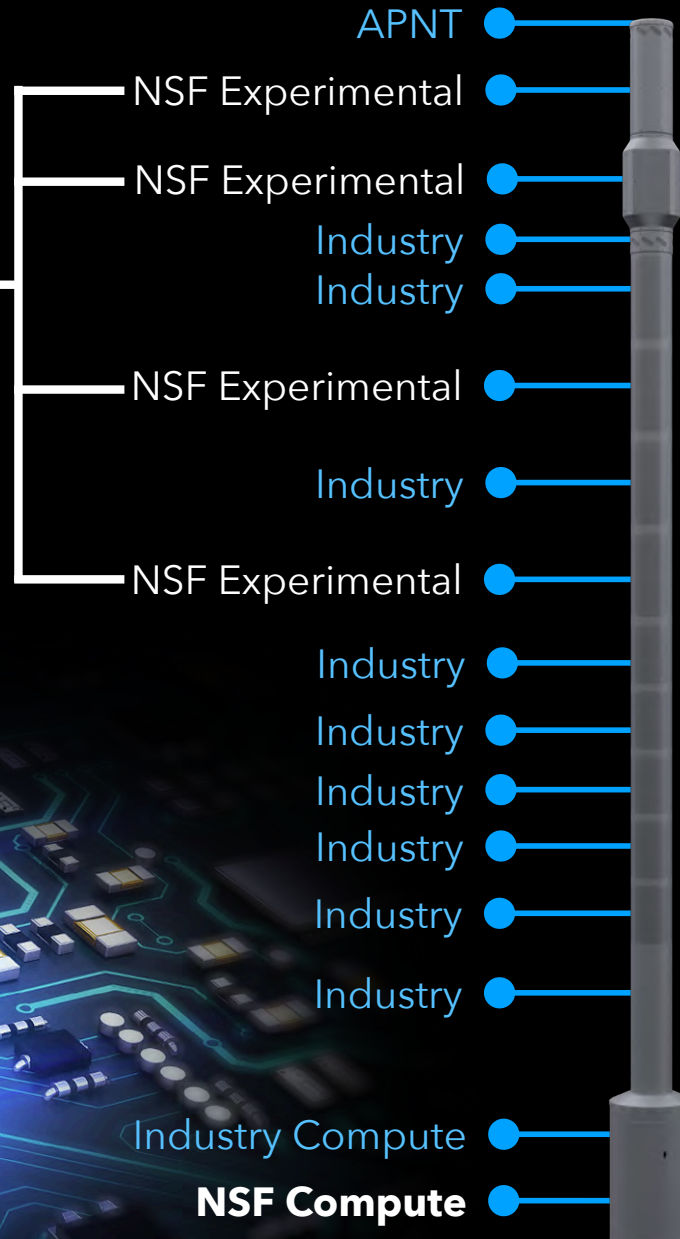
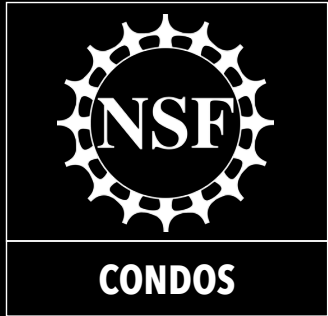
FORTERRA





PUBLIC INFRASTRUCTURE NETWORK NODE (PINN)

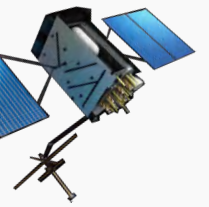
ACCELERATE RESEARCH, SCIENCE, INTELLIGENT APPLICATIONS, AND CITY RESILIENCE





PUBLIC INFRASTRUCTURE NETWORK NODES - PINN

UNIFIED INTELLIGENT & AUTONOMOUS CITY INFRASTRUCTURE (5G, EDGE, ITS, APNT, **GRID**)



Non-Cooperative is the Challenge

UAV
● ● ●

Delivery & Public Transit
● ● ●

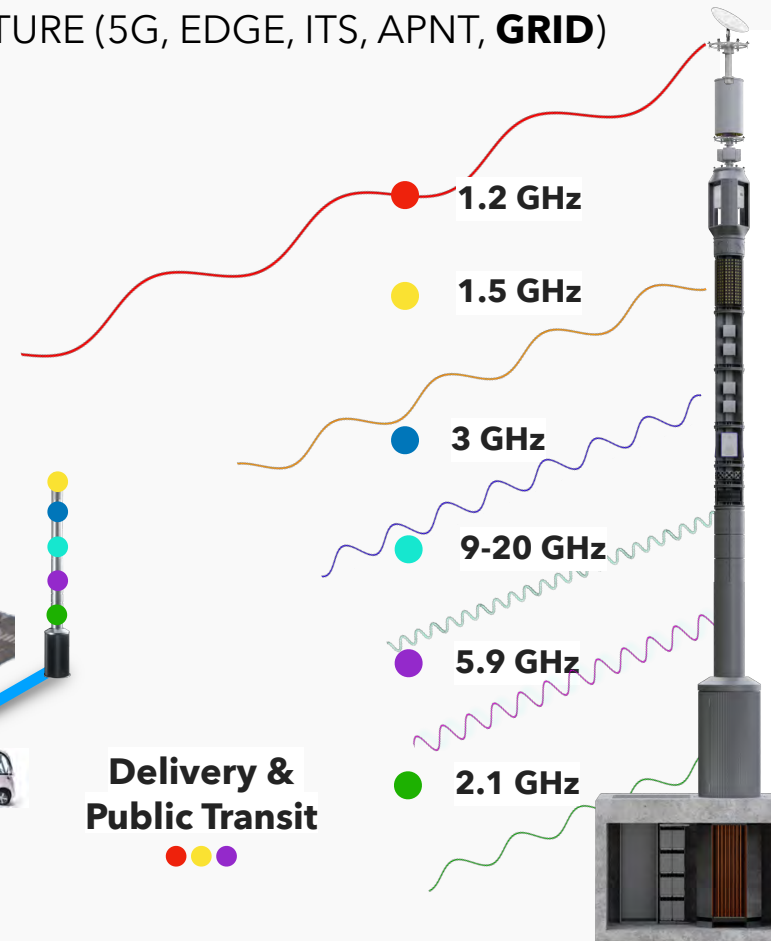
ENERGY & FIBER

PINN

Cars & Trucks
● ● ● ● ●



RESILIENT SYSTEMS ARE CRITICAL FOR INTELLIGENT CITIES



DIGITAL EDGE SOLUTIONS

Wireless

Transportation

Computing

Smart City

Electric

Government

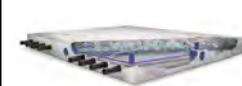
HScale Data Centers



Micro Data Centers



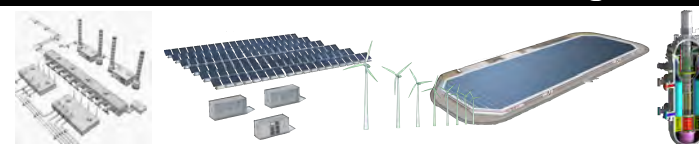
Smart Duct



FIBER



Green Electric Generation & Storage



HVDC



Microgrids



INDUSTRY 4.0 WILL CREATE MILLIONS OF **NEW JOBS**

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Artificial Intelligence
Urbanautic Engineers
Sensor Technicians
Automotive Engineers
Perception Engineers
PINN Manufacturing
Computer Science
Hardware Design
Embedded Systems

Cybersecurity
Resilient Systems
APNT Engineers
Wireless Networking
System Operations
Public Policy
Edge Computing
Aerospace Engineers
Radar Design

RF Design
Systems Manufacturing
Data Scientists
Thermal Design
PINN Installation
Clean Energy Systems
System Technicians
Urbanautic Policy
Field Service Technician

Field Autonomy Engineer
Autonomous Navigation
Robotics Engineer
Electrical Engineer
Industrial Design
Additive Manufacturing
Semiconductors
Emergency Response
Mechanical Technicians





PINN DEPLOYMENT FOR PUBLIC SAFETY, TRAFFIC & INSPECTIONS

INTEGRATED INTELLIGENT INFRASTRUCTURE SUPPORTING ADVANCED CITY & COMMUNITY SERVICES

Traffic Optimization/Safety



Public Safety



Accelerated Response



Emergency Response



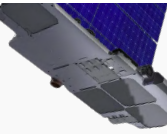
Inspections/Security



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PUBLIC SAFETY USE CASES FOR INTELLIGENT INFRASTRUCTURE



AR / VR TRAINING & DEVELOPMENT



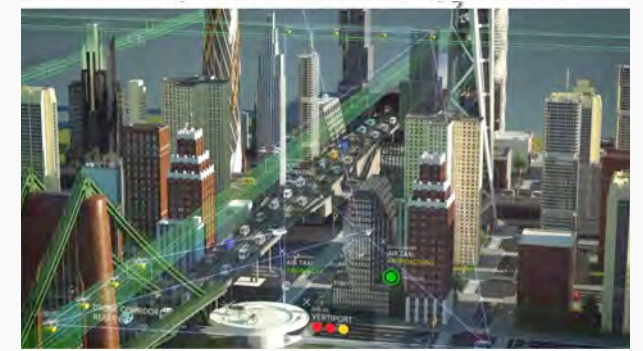
HEADS UP INFORMATION



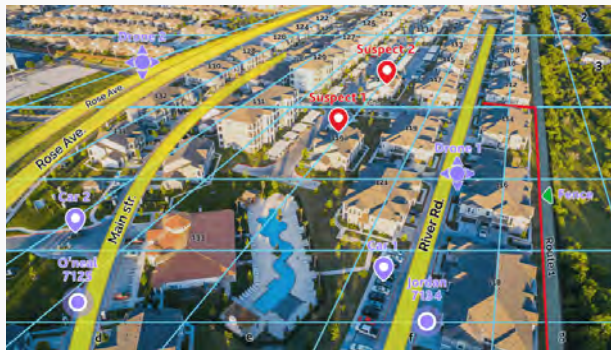
AR / VR TRAINING & DEVELOPMENT



CITY SCALE SIMULATION



LOCATION MANAGEMENT



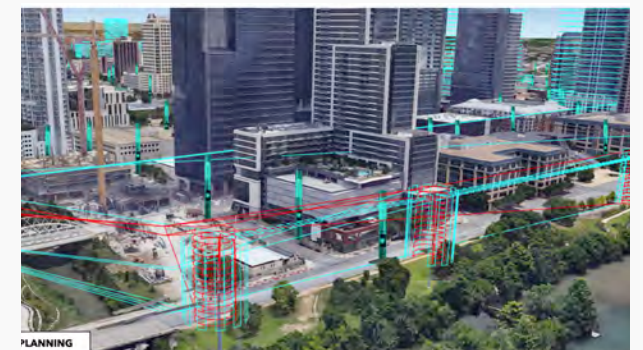
HEADS UP INFORMATION



DRONE SIMULATIONS



AVIGATION EASEMENTS





AVIGATION EASEMENTS FOR PUBLIC SAFETY, SECURITY & INSPECTIONS

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